

# **REMEDIAL CLOSURE REPORT**

June 1, 2016

***Submitted for:***

517 West 134<sup>th</sup> Street  
New York, NY 10031  
Block 1988, Lot 18  
OER Project Number# 14EHAZ303M  
CEQR # 12DCP070M  
E-Designation E-284  
West Harlem Rezoning

***Submitted to:***

New York City Office of Environmental Remediation  
100 Gold Street, 2<sup>nd</sup> Floor  
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6598-02-04-4001



# **REMEDIAL CLOSURE REPORT**

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## LIST OF ACRONYMS

Acronym	Definition
AST	Aboveground Storage Tank
CAMP	Community Air Monitoring Plan
C&D	Construction & Demolition
CEQR	City Environmental Quality Review
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
CO	Certificate of Occupancy
CPC	City Planning Commission
DSNY	Department of Sanitation
“E”	E-Designation
EAS	Environmental Assessment Statement
EIS	Environmental Impact Statement
ESA	Environmental Site Assessment
EC/IC	Engineering Control and Institutional Control
ELAP	Environmental Laboratory Accreditation Program
FDNY	New York City Fire Department
GPR	Ground Penetrating Radar
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations Emergency Response
IDW	Investigation Derived Waste
Notice - NNO	Notice of No Objection
Notice - NTP	Notice to Proceed
Notice - NOS	Notice of Satisfaction
Notice - FNOS	Final Notice of Satisfaction
NYC BSA	New York City Board of Standards and Appeals
NYC DCP	New York City Department of City Planning
NYC DEP	New York City Department of Environmental Protection
NYC DOB	New York City Department of Buildings
NYC DOF	New York City Department of Finance
NYC HPD	New York City Housing Preservation and Development
NYCRR	New York Codes Rules and Regulations
NYC OER	New York City Office of Environmental Remediation

NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYS DEC PBS	New York State Department of Environmental Conservation Petroleum Bulk Storage
NYS DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
OSHA	United States Occupational Health and Safety Administration
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PE	Professional Engineer
PID	Photo Ionization Detector
PM	Particulate Matter
QEP	Qualified Environmental Professional
RA	Register Architect
RAP	Remedial Action Plan
RCA	Recycled Concrete Aggregate
RCR	Remedial Closure Report
RD	Restrictive Declaration
RI	Remedial Investigation
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SSDS	Sub-Slab Depressurization System
SVOCs	Semi-Volatile Organic Compounds
USCS	Unified Soil Classification System
USGS	United States Geological Survey
UST	Underground Storage Tank
TAL	Target Analyte List
TCL	Target Compound List
TCO	Temporary Certificate of Occupancy
VB	Vapor Barrier
VOCs	Volatile Organic Compounds

# CERTIFICATION

*I, Joel Rogers, am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 517 West 134<sup>th</sup> Street Site I4EHAZ303M.*

*I certify that the OER-approved Remedial Action Plan dated May 22, 2014 was implemented and that all requirements in that document have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.*

Joel Rogers, P.E.  
Name

083034  
PE License Number

[Signature]  
Signature

6/2/2016  
Date





# CERTIFICATION

*I, Joel Rogers, am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 517 West 134<sup>th</sup> Street Site 14EHAZ303M.*

*I certify that the OER-approved Remedial Action Plan dated May 22, 2014 was implemented and that all requirements in that document have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.*

\_\_\_\_\_  
Name

\_\_\_\_\_  
PE License Number

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date



## **EXECUTIVE SUMMARY**

KP Developers has performed this remedial action to remediate a 3,938-square foot site located at 517 West 134th Street in Manhattan, New York. A Phase II Subsurface Investigation (Phase II) was performed to compile and evaluate data and information necessary to develop a Remedial Action Plan (RAP). The remedial action described in this document fulfills the remedial objectives defined in the RAP, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

### **Site Location and Prior Usage**

The Site is located in the West Harlem section of Manhattan, New York and is identified as Block number 1988 and Lot number 18 on the New York City Tax Map. The Site is 3,938-square feet and is bounded by a six-story residential building to the north, West 134th Street to the south, a five-story residential apartment building to the east, and a five-story residential apartment building to the west. Prior to redevelopment, the Site was a 39.42-ft x 99.92-ft vacant undeveloped lot. The surface area of the Site consisted of asphalt, exposed soil, minor vegetation and natural gradient.

### **Summary Redevelopment Plan**

The Site redevelopment consisted of the construction of an eight-story building with a 2,582 square-foot footprint and a sub-grade cellar level with a 3,938 square-foot footprint, fully encompassing the Site. The ground floor of the new building includes a driveway and one handicapped parking space in the area beneath the building structure and an additional three parking spaces in the rear yard (cellar roof deck). The cellar structure contains recreational space and building utilities. The second through eight floors contain 21 residential apartment buildings. The excavation depth of the cellar was approximately 10-feet below existing grade throughout the extent of the Site. Groundwater was not encountered during excavation activities. The new building structure covers the extent of the Site, there are no open landscaped areas. The current zoning designation, as per Department of City Planning NYC zoning maps, is R7A with no commercial overlay, which is consistent with the new development.

## **Site Description, Physical Setting and Site History**

The Site is located in the West Harlem neighborhood of Manhattan. West Harlem is bounded 110<sup>th</sup> Street to the South; 155<sup>th</sup> Street to the North; Manhattan Avenue, Morningside Avenue, St Nicholas Avenue, Bradhurst Avenue, Edgecome Avenue to the east; and Morningside Park and the Hudson River on the west. West Harlem consists of mostly well-maintained, fully occupied residential building stock, predominantly of low- to mid-rise buildings. Five- and six-story apartment buildings, three- and four-story brownstones and rowhouses significantly contribute to the neighborhood's building stock. West 145<sup>th</sup> Street is the neighborhood's major east-west corridor containing mixed-use commercial and residential buildings. A small concentration of light industrial and transportation use buildings exist in the southern edge of West Harlem, bounded by West 126<sup>th</sup> and West 129<sup>th</sup> streets. The West Harlem Rezoning Resolution was approved in November 2012 to reinforce the special character of West Harlem's residential neighborhoods by updating the existing zoning with new contextual forms that complement the existing urban fabric, activate the existing manufacturing area to support economic development and mixed uses, strengthen the West 145<sup>th</sup> Street corridor by allowing development opportunities and incentivize affordable housing.

## **Summary of Past Uses of Site and Environmental Findings**

A Phase I Environmental Site Assessment (ESA) Report dated July 29, 2013 was prepared by Singer Environmental Group, LTD. The ESA revealed that the Site is depicted as residential use from 1909 to 1996 on historical Sanborn maps.

The March 2014 Phase II Environmental Site Investigation found the following:

1. Elevation of the property above mean sea level ranges from approximately 114 to 107 feet.
2. Groundwater was not encountered during the Phase II Investigation.
3. Groundwater is expected to flow from east to west, towards the Hudson River, below the Site.
4. Bedrock was not encountered during the Phase II Investigation.

5. The stratigraphy of the site consisted of historic fill, which was primarily comprised of concrete, brick, stone, gravel, asphalt, and trace coal in a brown to dark-brown silty to medium coarse sand matrix. Historic fill was encountered at a depth interval ranging from 0 to 11.5 feet bgs in SB-1, 0 to 10 feet bgs in SB-2, and 0-12 feet bgs in SB-3. Visible petroleum staining was observed in soil recovered from SB-2 and SB-3 at 8-10 feet bgs and 9-11 feet bgs, respectively. Light brown silty to fine coarse sand with decomposed rock was encountered at 11.5 to 12 feet bgs in SB-1 and 10 to 12 feet bgs in SB-2.
6. Laboratory analysis of soil/fill samples collected during the Phase II Investigation detected PCE at trace levels below Unrestricted Use SCOs in two samples. BTEX compounds and other petroleum related volatile organic compounds were detected at trace levels below Unrestricted Use SCOs in all six samples. TCE, TCA, vinyl chloride, carbon tetrachloride and other chlorinated VOCs were not detected in soil samples collected during this investigation. Several SVOC polycyclic aromatic hydrocarbons (PAHs) (benzo compounds, chrysene, dibenzo-a,h-anthracene and indeno(1,2,3-cd)pyrene) were detected above Restricted Residential Use SCOs within the three shallow soil samples. Maximum concentrations for each of these compounds were found in the shallow sample (0'-2') collected at SB-1: benzo(a)anthracene at 8,800 ug/kg, benzo(a)pyrene at 8,000 ug/kg, benzo(b)fluoranthene at 9,300 ug/kg, chrysene at 8,500 ug/kg, dibenzo(a,h)anthracene at 2,600 ug/kg, and ideno(1,2,3-cd)pyrene at 8,200 ug/kg. Benzo(k)fluoranthene exceeded Unrestricted Use SCOs in this boring at 3,900 ug/kg. Three pesticides (4,4-DDD, 4,4-DDE, 4,4-DDT) were detected above Unrestricted Use SCOs in the three shallow soil samples and one deep soil sample (SB-3) at maximum concentrations of 216 ug/kg, 122 ug/kg, and 586 ug/kg. Dieldrin was detected above Unrestricted Use SCOs in the three shallow soil samples at a maximum concentration of 89.2 ug/kg. Alpha Chlordane was detected above Unrestricted Use SCOs in shallow soil sample, SB-2, at 95.4 ug/kg. Polychlorinated biphenyls (PCBs) were not detected in soil samples collected during this investigation. Five metals (arsenic, copper, lead, mercury and zinc) were detected above Unrestricted Use SCOs in the three shallow soil samples and two deep soil samples. Four metals (arsenic [max. of 20mg/kg], barium [max. of 960 mg/kg], lead

[max. of 620 mg/kg], and mercury [max. of 1.1 mg/kg]) were detected above Restricted Residential Use SCO in two shallow soil samples.

7. Laboratory analysis of the soil vapor sample collected during the Phase II Investigation detected several VOCs at concentrations ranging from 0.795 ug/m<sup>3</sup> (benzene) to 23.4 ug/m<sup>3</sup> (ethanol). All VOCs were detected at levels below 30 ug/m<sup>3</sup>, including trace to low level detection of several chlorinated VOCs. PCE, TCE, TCA, vinyl chloride and carbon tetrachloride were not detected in the soil vapor sample. All chlorinated compounds were below the guidance matrix for monitoring established by NYSDOH.

### **Summary of the Remedy**

The following remedial actions were completed in this program:

1. Performed Community Air Monitoring Program for particulates and volatile organic carbon compounds.
2. Established Restricted Residential Use Soil Cleanup Objectives (SCOs) for contaminants of concern.
3. Mobilized site security, equipment, utility mark outs and marked & staked excavation areas
4. Implemented storm-water pollution prevention measures in compliance with applicable laws and regulations.
5. Screened excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID
6. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and the RAP. Sampled and analyzed excavated media as required by disposal facilities. Appropriately segregated excavated media onsite.
7. Soil/fill was excavated to a depth of approximately 10 feet below grade surface. A total of 1,510.13 tons of soil/fill exceeding Restricted Residential Use SCO was

- excavated and disposed off-Site to the Phase III Environmental Former NJ Zinc-West Plant in Palmerton, PA.
8. Constructed an engineered composite cover consisting of 12-inch thick concrete foundation walls and 6-inch thick concrete foundation slab to prevent human exposure to residual soil/fill remaining under the Site
  9. Installed a vapor barrier system that consisted of a non-waterproofing 20-mil VaporBlock<sup>®</sup> Plus<sup>™</sup> 20 co-extruded vapor barrier membrane beneath the building slab and behind sub-grade foundation walls.
  10. Performed all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
  11. Submitted this Remedial Closure Report (RCR) that outlines the remedial activities, certifies that the remedial requirements have been achieved, and describes all Engineering and Institutional Controls have been implemented at the Site, and lists any changes from the RAP.

# REMEDIAL CLOSURE REPORT

## 1.0 SITE BACKGROUND

This Remedial Closure Report (RCR) has been developed for 517 West 134th Street in the West Harlem section of Manhattan, New York (the Site). This project has been assigned project number 14EHAZ303M by the New York City Office of Environmental Remediation (OER). This RCR describes the remediation and/or mitigation activities implemented at the Site in coordination with OER for the purposes of satisfying the requirements of the Hazardous Materials E-Designation Program and obtaining a Notice of Satisfaction. An E-Designation for Hazardous Materials (E-284) was placed on the Site by the New York City Department of City Planning (DCP) as part of the November 13, 2012, West Harlem rezoning action (CEQR number 12DECP070M).

### 1.1 Site Location and Prior Usage

The Site is located in the West Harlem section of Manhattan, New York and is identified as Block number 1988 and Lot number 18 on the New York City Tax Map. **Figure 1** is a Site location map. The Site is 3,938-square feet and is bounded by a six-story residential building to the north, West 134th Street to the south, a five-story residential apartment building to the east, and a five-story residential apartment building to the west. Prior to redevelopment, the Site was a 39.42-ft x 99.92-ft vacant undeveloped lot. The surface area of the Site consisted of asphalt, exposed soil, minor vegetation and natural gradient. The Site Plan is provided as **Figure 2**.

### 1.2 Redevelopment Plan

The Site redevelopment consisted of the construction of an eight-story building with a 2,582 square-foot footprint and a sub-grade cellar level with a 3,938 square-foot footprint, fully encompassing the Site. The ground floor of the new building includes a driveway and one handicapped parking space in the area beneath the building structure and an additional three parking spaces in the rear yard (cellar roof deck). The cellar structure contains recreational space and building utilities. The second through eight floors contain 21 residential apartment buildings.

The excavation depth of the cellar was approximately 10-feet below existing grade throughout the extent of the Site. Groundwater was not encountered during excavation activities. The new building structure covers the extent of the Site, there are no open landscaped areas. The current zoning designation, as per Department of City Planning NYC zoning maps, is R7A with no commercial overlay, which is consistent with the new development. Development plans are included in **Appendix 1**.

### **1.3 Environmental Investigations**

The Phase II Environmental Site Investigation found the following:

1. Elevation of the property above mean sea level ranges from approximately 114 to 107 feet.
2. Groundwater was not encountered during the Phase II Investigation.
3. Groundwater is expected to flow from east to west, towards the Hudson River, below the Site.
4. Bedrock was not encountered during the Phase II Investigation.
5. The stratigraphy of the site consisted of historic fill, which was primarily comprised of concrete, brick, stone, gravel, asphalt, and trace coal in a brown to dark-brown silty to medium coarse sand matrix. Historic fill was encountered at a depth interval ranging from 0 to 11.5 feet bgs in SB-1, 0 to 10 feet bgs in SB-2, and 0-12 feet bgs in SB-3. Visible petroleum staining was observed in soil recovered from SB-2 and SB-3 at 8-10 feet bgs and 9-11 feet bgs, respectively. Light brown silty to fine coarse sand with decomposed rock was encountered at 11.5 to 12 feet bgs in SB-1 and 10 to 12 feet bgs in SB-2.
6. Laboratory analysis of soil/fill samples collected during the Phase II Investigation detected PCE at trace levels below Unrestricted Use SCOs in two samples. BTEX compounds and other petroleum related volatile organic compounds were detected at trace levels below Unrestricted Use SCOs in all six samples. TCE, TCA, vinyl chloride, carbon tetrachloride and other chlorinated VOCs were not detected in soil samples collected during this investigation. Several SVOC polycyclic aromatic hydrocarbons (PAHs) (benzo compounds, chrysene, dibenzo-a,h-anthracene and indeno(1,2,3-cd)pyrene) were detected above Restricted Residential Use SCOs within the three



shallow soil samples. Maximum concentrations for each of these compounds were found in the shallow sample (0'-2') collected at SB-1: benzo(a)anthracene at 8,800 ug/kg, benzo(a)pyrene at 8,000 ug/kg, benzo(b)fluoranthene at 9,300 ug/kg, chrysene at 8,500 ug/kg, dibenzo(a,h)anthracene at 2,600 ug/kg, and ideno(1,2,3-cd)pyrene at 8,200 ug/kg. Benzo(k)fluoranthene exceeded Unrestricted Use SCOs in this boring at 3,900 ug/kg. Three pesticides (4,4-DDD, 4,4-DDE, 4,4-DDT) were detected above Unrestricted Use SCOs in the three shallow soil samples and one deep soil sample (SB-3) at maximum concentrations of 216 ug/kg, 122 ug/kg, and 586 ug/kg. Dieldrin was detected above Unrestricted Use SCOs in the three shallow soil samples at a maximum concentration of 89.2 ug/kg. Alpha Chlordane was detected above Unrestricted Use SCOs in shallow soil sample, SB-2, at 95.4 ug/kg. Polychlorinated biphenyls (PCBs) were not detected in soil samples collected during this investigation. Five metals (arsenic, copper, lead, mercury and zinc) were detected above Unrestricted Use SCOs in the three shallow soil samples and two deep soil samples. Four metals (arsenic [max. of 20mg/kg], barium [max. of 960 mg/kg], lead [max. of 620 mg/kg], and mercury [max. of 1.1 mg/kg]) were detected above Restricted Residential Use SCOs in two shallow soil samples.

7. Laboratory analysis of the soil vapor sample collected during the Phase II Investigation detected several VOCs at concentrations ranging from 0.795 ug/m<sup>3</sup> (benzene) to 23.4 ug/m<sup>3</sup> (ethanol). All VOCs were detected at levels below 30 ug/m<sup>3</sup>, including trace to low level detection of several chlorinated VOCs. PCE, TCE, TCA, vinyl chloride and carbon tetrachloride were not detected in the soil vapor sample. All chlorinated compounds were below the guidance matrix for monitoring established by NYSDOH.

For environmental investigation data, consult the Phase II Investigation Report dated April 17, 2014.

## **2.0 DESCRIPTION OF REMEDIAL ACTIONS**

The Site was remediated in accordance with the scope of work presented in the OER-approved Remedial Action Plan (RAP) dated May, 2014. Remedial actions were taken in accordance with applicable laws and regulations, and the site-specific-construction Construction Health and Safety Plan (CHASP). Any deviations from the RAP are noted below.

The following remedial actions were completed in this program:

1. Performed Community Air Monitoring Program for particulates and volatile organic carbon compounds.
2. Established Restricted Residential Use Soil Cleanup Objectives (SCOs) for contaminants of concern.
3. Mobilized site security, equipment, utility mark outs and marked & staked excavation areas
4. Implemented storm-water pollution prevention measures in compliance with applicable laws and regulations.
5. Screened excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID
6. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and the RAP. Sampled and analyzed excavated media as required by disposal facilities. Appropriately segregated excavated media onsite.
7. Soil/fill was excavated to a depth of approximately 10 feet below grade surface. A total of 1,510.13 tons of soil/fill exceeding Restricted Residential Use SCOs was excavated and disposed off-Site to the Phase III Environmental Former NJ Zinc-West Plant in Palmerton, PA.
8. Constructed an engineered composite cover consisting of 12-inch thick concrete foundation walls and 6-inch thick concrete foundation slab to prevent human exposure to residual soil/fill remaining under the Site

9. Installed a vapor barrier system that consisted of a non-waterproofing 20-mil VaporBlock<sup>®</sup> Plus<sup>™</sup> 20 co-extruded vapor barrier membrane beneath the building slab and behind sub-grade foundation walls.
10. Performed all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
11. Submitted this Remedial Closure Report (RCR) that outlines the remedial activities, certifies that the remedial requirements have been achieved, and describes all Engineering and Institutional Controls have been implemented at the Site, and lists any changes from the RAP.

### **3.0 COMPLIANCE WITH REMEDIAL ACTION PLAN**

#### **3.1 Construction Health and Safety Plan**

The remedial construction activities performed under this program were in compliance with the site-specific CHASP and applicable laws and regulations. The Site Safety Coordinator was Benjamin Hernandez-Salazar.

#### **3.2 Community Air Monitoring Plan**

The Community Air Monitoring Plan provided for the collection and analysis of air samples during remedial construction activities to ensure proper protections were employed to protect workers and the neighboring community. Monitoring was performed in compliance with the Community Air Monitoring Plan in the approved RAP. The results of Community Air monitoring are shown in **Appendix 2**.

#### **3.3 Soil/Materials Management Plan**

The Soil/Materials Management Plan in the RAP provided detailed plans for managing all soils/materials that were disturbed at the Site, including excavation, handling, storage, transport and disposal. It also included a series of controls to assure effective, nuisance free remedial activity in compliance with applicable laws and regulations. Remedial construction activities performed under this program were in compliance with the SMMP in the approved RAP.

#### **3.4 Storm-Water Pollution Prevention**

Storm water pollution prevention included physical methods and processes to control and/or divert surface water flows and to limit the potential for erosion and migration of Site soils, via wind or water. Remedial construction activities performed under this program were in compliance with applicable storm-water pollution prevention laws and regulations and the RAP.

#### **3.5 Deviations from the Remedial Action Plan**

No significant deviations from the RAP were noted during implementation of the Remedial Action. No material was imported to the Site, no USTs were identified, and Unrestricted Use

SCOs were not achieved, precluding the need for the collection of endpoint soil samples or groundwater samples as stipulated in the RAP. The following deviation from the RAP is noted:

1. The vapor barrier system described in the RAP is a Griffolyn 20 Mil Reinforced vapor barrier membrane (20 mil thickness), manufactured by Reef Industries, Inc. The vapor barrier system installed at the Site was a VaporBlock<sup>®</sup> Plus<sup>™</sup> 20 co-extruded vapor barrier membrane (20 mil thickness), manufactured by Raven Industries, Inc. This is an equivalent system to the one described in the RAP. Specifications for this membrane are included in **Appendix 3**, along with an As-Built plan.

## **4.0 REMEDIAL PROGRAM**

### **4.1 Project Organization**

Principal personnel who participated in the remedial action include Benjamin Hernandez Salazar, Environmental Project Manager. The Professional Engineer (PE) for this project is Joel Rogers, P.E..

### **4.2 Site Controls**

#### **Site Preparation**

Prior to redevelopment work, the Site was secured with plywood fencing throughout the perimeter of the lot. All appropriate New York City Department of Buildings (NYC DOB) permits and other NYC Agency approvals were obtained and were displayed on the fence. Prior to commencement of excavation activities, a pre-construction meeting held with NYC OER, the development team, and the construction team on December 8, 2014. In-situ soil waste characterization was performed prior to excavation and disposal facility approvals were obtained prior to initiating trucking activities. Prior to and during the completion of remedial excavation, a RCA truck pad was created and maintained at the entry/exit gate(s) to control contaminated soil/sediment tracking onto the city streets, and a water source was made available to allow for dust suppression.

In accordance with the RAP, a representative from Impact was on-site during any intrusive soil excavation to perform real-time air monitoring for particulates and volatile organic compounds as well as regulate excavated soil waste streams to ensure transportation to the appropriate approved disposal facilities. Excavation activities began on February 9, 2015.

#### **Soil Screening**

Soil was screened during all intrusive soil excavation activities by Impact. Excavated materials were screened for visual and olfactory evidence of contamination (i.e., staining or odors) and with a PID to measure concentrations of VOC's. Excavated soil/fill material was segregated based on these observations in conjunction with the waste characterization disposal site plan, pending transport and disposal at the appropriate facilities

## **Stockpile Management**

No stockpiling of soils occurred onsite during soil excavation, all soils were direct-loaded onto trucks.

## **Truck Inspection**

An outbound-truck inspection station was set up at the Site exit. Before exiting the Site, trucks stopped at the truck inspection station and were examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris were removed, if present. Brooms, shovels and potable water were utilized for the removal of soil from vehicles and equipment, as necessary.

## **Site Security**

Site access was controlled by an 8-foot wood construction fence fronting 134th Street, which secured the Site with a gated locked entrance. Site was not accessible to the public during off-work hours

## **Nuisance Controls**

Site perimeters, CAMP stations, the surrounding vicinity, and on-site working conditions were monitored during remedial activities by an on-site Impact field representative. The General Contractor were notified immediately if elevated particulate concentrations, odors, or visible dust was observed, and corrective action was taken in accordance with the CAMP, Construction Health and Safety Plan (CHASP), and RAP. No complaints from the public or surrounding property owners regarding dust and/or odors were reported during the completion of remedial activities

## **Reporting**

Daily reports providing a general summary of activities for each day of active remedial work were be emailed to the OER Project Manager by the end of the following day. Those reports included:

- Project number and statement of the activities and an update of progress made and locations of work performed;

- Quantities of material imported and exported from the Site;
- Status of on-Site soil/fill stockpiles;
- A summary of any citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP excursions, if any;
- Photograph of notable Site conditions and activities.

All daily and monthly reports are included in **Appendix 5**.

Job-site record keeping for all remedial work was performed. Representative photographs were taken of the Site prior to any remedial activities and during major remedial activities to illustrate remedial program elements and contaminant source areas.

Digital photographs of the remedial action are included in **Appendix 6**.

#### **4.3 Materials Excavation and Removal**

Soil/fill material excavated from the project Site exceeding Restricted Residential SCO's was transported offsite via tri-axle dump trucks as PA Regulated Fill to the Phase III/Former New Jersey Zinc-West Plant, 1120 Mauch Chunk Rd., Palmerton, PA. A total of 53 truckloads were removed from the project Site between February and December 2015. Specific dates of soil removal were February 9, March 31, August 19-20, November 18, 23, 25, 30, and December 8, 2015. The whole site footprint was excavated to 10 ft bgs and in the elevator pit to 14 ft bgs. A map showing the location where excavations were performed is shown in **Figure 3**.

#### **4.4 End Point Sample Results**

Collection of post-remediation end-point samples was not required for Restricted Residential Use SCOs. Soil analysis data from the Phase II Investigation soil borings "SB-1", "SB-2", "SB 3" at 10-12-feet below grade ("deep samples") shows that soil exceeding Restricted Residential Use SCOs was excavated and disposed offsite and soil meeting Restricted Residential Use SCOs remains at the bottom of excavation. Phase II Investigation deep sample data is presented in **Table 1**. Locations of Phase II samples are depicted in **Figure 3**.



## 4.5 Materials Disposal

Impact Environmental conducted in-situ waste characterization of the soil/fill material throughout the Site in anticipation of the soil excavation required for construction of the building foundation. Sampling was conducted to identify and quantify the contaminants in the Site soil/fill. The characterization samples were collected from existing grade to 10 feet below grade for the general excavation. Samples were collected at a frequency of 1 sample per 1,000 cubic yards. Across the site, the historical fill layer was found to extend to approximately 10 feet below grade. Each waste characterization sample comprised of one discrete grab sample and one five-point composite sample. The samples were properly containerized into jars for transport under active chain of custody and submitted for analysis at a certified laboratory.

The tonnage of material removed and disposed off-Site is presented below:

Destination	Type of Material	Quantity
Phase III/Former New Jersey Zinc- West Plant 1120 Mauch Chunk Rd. Palmerton, PA	Non-Hazardous Fill/Soil meeting PA Regulated Fill Standards	1,510.13 tons

A Material Characterization form completed by KP Developers for the disposal facility providing materials type, source and data; and an acceptance letter from the disposal facility stating it is approved to accept these materials are attached in **Appendix 7**. Waste disposal manifests are included in **Appendix 8**. The table above shows the total quantities of material removed from the Site and the disposal location. A total of 53 truckloads were removed from the project Site between February and December 2015. Specific dates of soil removal were February 9, March 31, August 19-20, November 18, 23, 25, 30, and December 8, 2015. The whole site footprint was excavated to 10 ft bgs and in the elevator pit to 14 ft bgs. A map showing the excavation extents is shown in **Figure 3**.

## 4.6 Backfill Import

No backfill was imported as part of the Site remediation and construction of the new building.

#### **4.7 Demarcation**

Track 2 Restricted Residential SCOs were achieved in this remedial action and no demarcation was required.

## 5.0 ENGINEERING CONTROLS

Engineering Controls were employed in the remedial action to address residual contamination remaining at the site. The Site has two (2) primary Engineering Control Systems. These are:

- (1) a composite cover system consisting of concrete building foundation slabs and walls;
- (2) vapor barrier system;

### 5.1 Composite Cover System

Exposure to residual soil/fill will be prevented by the engineered, composite cover system that was built on the Site. This composite cover system is comprised of 12-inch thick concrete foundation walls and a 6-inch thick concrete foundation slab beneath the entire proposed building. Development plans included in **Appendix 1** shows the typical design for each remedial cover type used on this Site. **Figure 4** shows the location of each cover type built at the Site. The composite cover system is a permanent engineering control for the Site. Upon completion of construction, there was no exposed soil or grade-level landscaping on the Site.

### 5.2 Vapor Barrier System

Exposure to soil vapor will be mitigated with a combination of building slab and non-waterproofing vapor barrier membrane system. The vapor barrier system installed at the Site was a VaporBlock<sup>®</sup> Plus<sup>™</sup> 20 co-extruded vapor barrier membrane (20 mil thickness), manufactured by Raven Industries, Inc.. The vapor barrier membrane was installed in two sections on August 20 and December 11, 2015. Vapor barrier components were installed as per manufacturer's specifications. Vapor barrier seams were overlapped a minimum of 4-inches and adhered with the manufacturers recommended tape. Utility pipe and conduit penetrations were sealed with pipe boots assembled from the vapor barrier material and adhered to the penetrations and underlying vapor barrier with the vapor barrier tape. Inspections of the vapor barrier installation were performed under the oversight of a Professional Engineer. Vapor barrier manufacturer specifications and an As-Built drawing are referenced in **Appendix 3**.

## 6.0 INSTITUTIONAL CONTROLS

ICs will be utilized to manage residual historical fill and to render the site protective of public health and the environment. Long-term employment of ICs will be implemented under the site-specific SMP for that is included in this RCR.

ICs for the site are:

- Adherence to the SMP, included as a part of this RCR, which provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting and certification of ECs. The SMP requires that the property owner and property owner's successors and assigns will submit to NYC OER a periodic written statement that certifies that: (1) ECs and ICs employed at the site are unchanged from the previous certification or that any changes to the controls were approved by NYC OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. After providing notice, NYC OER retains the right to enter the SMP area in order to evaluate the continued maintenance of any controls. All future activities that will disturb residual material must be conducted pursuant to the soil management provisions in the NYC OER-approved SMP.
- Vegetable gardens and farming on-site and in contact with residual contaminated soil materials are prohibited.
- Use of groundwater underlying the site is prohibited without treatment rendering it safe for its intended use.

## **7.0 SITE MANAGEMENT PLAN**

Site Management is the last phase of the remedial process and begins after the approval of the RCR and issuance of the Notice of Satisfaction by NYC OER. It is the responsibility of the property owner to ensure that all Site Management responsibilities are performed. The penalty for failure to implement the SMP includes revocation of the Notice of Satisfaction and all associated certifications and liability protections.

ECs and ICs have been incorporated into this remedial action to ensure that the site remains protective of public health and the environment. Generally, ECs provide physical protective measures and ICs provide restrictions on site usage and establish remedial operation, maintenance, inspection and certification measures. This SMP has been established to govern long-term performance of ECs and ICs.

The SMMP provides a detailed description of procedures required to manage residual material following the completion of remedial construction. This includes: (1) operation and maintenance of ECs; (2) inspection of ECs and ICs; and (3) certification of performance of ECs and ICs. The SMMP is included in Section 7.5.

### **7.1 Engineering Control**

EC's were employed in the remedial action to address residual contamination remaining at the site. The site's EC's are a composite cover system and a waterproofing/vapor barrier system (minimum thickness of 20 mils) that is associated with the cellar slab and subsurface walls.

#### **Operation and Maintenance of Composite Cover System**

Section 5 describes the composite cover system utilized in this remedial action. The composite cover system is a permanent EC. The composite cover system will be inspected and its performance certified at specified intervals defined in this SMP. An SMMP is included in Section 7.5 and outlines the procedures to be followed in the event that the composite cover system and underlying residual soil/material must be disturbed after the remedial action is complete.

The composite cover system will be inspected on a periodic basis and does not require any special operation or maintenance activities. If the system is breached during future construction

activities, the system will be rebuilt by reconstructing the system according to the original design and tying newly constructed cover layers into existing cover layers to form a continuous layer(s).

## **7.2 Institutional Controls**

A series of ICs are required under this remedial action for the protection of public health by elimination of exposure to residual materials. These ICs define the program to operate, maintain, inspect, and certify the performance of ECs and ICs on this property. These ICs will be implemented in accordance with this SMP.

ICs are also designed to prevent future exposure to residual soil/materials by controlling disturbances in the subsurface, restrict higher uses of the property than those addressed by the remedial action and establish restrictions on on-site activities and usage. ICs for the site are:

- Adherence to the SMP, included as a part of this RCR, which provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting, and certification of ECs. The SMP requires that the property owner and property owner's successors and assigns will submit to NYC OER an written statement that certifies that: (1) ECs and ICs employed at the site are unchanged from the previous certification or that any changes to the controls were approved by NYC OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. After providing notice, NYC OER retains the right to enter the SMP area in order to evaluate the continued maintenance of any controls. All future activities that will disturb residual material must be conducted pursuant to the soil management provisions in the NYC OER-approved SMP.
- Vegetable gardens and farming on-site and in contact with residual contaminated soil materials are prohibited.
- Use of groundwater underlying the site is prohibited without treatment rendering it safe for its intended use.

## **7.3 Inspections**

ECs and ICs will be inspected on a periodic basis as described below. The inspections will evaluate the following:

- If ECs or ICs continue to perform as designed and continue to be protective of human health and the environment;
- If anything has occurred that impairs the ability of the ECs or ICs to protect public health and the environment;
- If changes are recommended;
- If compliance with this SMP has been maintained;
- If site records are complete and up to date; and
- General site conditions at the time of inspection.

In addition, if an emergency occurs, such as a natural disaster, or if an unforeseen failure of any of the ECs occurs, an inspection of the site will be performed within 30 days to evaluate the ECs and a letter report of findings will be submitted to NYC OER.

### **Inspection of Composite Cover System**

The composite cover system will be inspected on a periodic basis as described below and does not require any special operation or maintenance activities. If the system is breached during future construction activities, the system will be rebuilt by reconstructing the system according to the original design and tying newly constructed cover layers into existing cover layers to form a continuous layer(s).

### **Site Use Prohibitions**

Inspections to evaluate the status of site use-prohibitions will include an evaluation of whether there is vegetable gardening or farming in residual soil/fill; whether groundwater underlying area has been used without treatment rendering it safe for its intended use; whether activities that have disturbed site soil/fill have been conducted pursuant to the SMMP provisions of the SMP, or otherwise approved by NYC OER; and whether the site has been used for a higher level of use other than the restricted residential/commercial use addressed by the Remedial Action.

## **7.4 Inspection and Certification Letter Report**

Results of inspections performed during a reporting period and certification of performance of all ECs and ICs will be included in an Inspection and Certification Letter Report to be submitted by

July 30, 2027 (for the reporting period calendar year 2017 to 2026) and every ten years thereafter (for the reporting period consisting of the ten prior calendar years). Inspection and Certification Letter Reports will be submitted to NYC OER in digital format. The letter report will include, at a minimum:

- Date of inspections;
- Personnel conducting inspections;
- Description of the inspection activities performed;
- Any observations, conclusions, or recommendations;
- Copy of any inspection forms; and
- Certification of the performance of ECs and ICs, as discussed below.

The certification of the performance of ECs and ICs will establish:

- If ECs or ICs continue to be in place and perform as designed and continue to be protective of human health and the environment;
- If anything has occurred that impairs the ability of ECs or ICs to protect public health and the environment;
- If changes are recommended;
- If compliance with this SMP has been maintained;
- If vegetable gardening and farming in residual soils has been prevented;
- If groundwater underlying the site is being utilized without treatment rendering it safe for the intended purpose has been prevented;
- If activities within the site that have disturbed residual soil/fill material have been in accordance with the SMMP in this SMP;
- If the site has been used for a higher level of use other than the restricted residential/commercial use addressed by the Remedial Action;
- If site records are complete and up to date; and



- If the site continues to be registered as an E-Designated property.

NYC OER may enter the site, upon notice, for the purpose of evaluating the performance of ECs and ICs.

## **7.5 Notifications**

Notifications will be submitted by the property owner to NYC OER as described below:

- 60-day advance notice of any proposed changes in site use that was not contemplated in the Remedial Action.
- Notice within 30 days of any emergency, such as a fire, flood, or earthquake that has the potential to reduce the effectiveness of ECs in place on-site.

## **7.6 Soil/Materials Management Plan**

Any future intrusive work that will disturb residual soil/fill beneath the site, including modifications or repairs to the existing composite cover system, will be performed in compliance with the SMMP, as outlined in this section. Intrusive work will also be conducted in accordance with the procedures defined in the CAMP (included in Section 7.7) and a CHASP. The CHASP is the responsibility of the property owner and should be in compliance with NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation and 29 CFR 1910 and 1926, and all other applicable Federal, State and City regulations. Intrusive construction work should be compliant with this SMMP and described in the next Inspection and Certification Letter Report.

### **7.6.1 Soil Screening Methods**

Visual, olfactory and PID soil screening and assessment will be performed by engineers, geologists and scientist under the supervision of a Qualified Environmental Professional (QEP). Soil screening will be performed during any future intrusive work.

### **7.6.2 Stockpile Methods**

Stockpiles will be used to isolate excavated soil and will be removed as is reasonably practicable. While stockpiles are in place, they will be inspected daily and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYC OER. Excavated soils will be stockpiled on, at minimum, double layers of 6-

mil minimum thickness sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

All stockpile activities will be compliant with applicable laws and regulations. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials must be located at least 50 feet from the property boundaries, where possible. Hay bales, or equivalent, will surround soil stockpiles except for areas where access by equipment is required. Silt fencing and hay bales will be used, as needed, near catch basins, surface waters, and other discharge points.

### **7.6.3 Characterization of Excavated Materials**

Soil/fill or other excavated media that is transported off-site for disposal will be sampled in a manner required by the receiving facility and in compliance with applicable laws and regulations. Excavated soil will only be reused on-site with prior approval by NYC OER.

### **7.6.4 Materials Excavation, Load-Out and Departure**

The QEP overseeing the remedial action will:

- Direct engineers, scientist and geologist to document intrusive work and the excavation and load-out of excavated material;
- Ensure that there is a party responsible for the safe execution of invasive and other work performed under this SMMP;
- Ensure that site maintenance activities and maintenance-related grading cuts will not interfere with or otherwise impair or compromise the remedial measures established during the remediation construction phase;
- Ensure that the presence of on-site utilities has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- Ensure that all loaded outbound trucks are inspected and cleaned if necessary before leaving the site; and
- Ensure that all egress points for truck and equipment transport from the site will be kept clean of site-derived materials during site intrusive work.

Locations where vehicles exit the site must be inspected daily for evidence of off-site soil tracking. Cleaning of the adjacent streets will be performed, as needed, to maintain a clean condition with respect to site-derived materials.

#### **7.6.5 Off-Site Materials Transport**

Loaded vehicles leaving the site will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. If loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed on-site, when possible, in order to minimize off-site disturbance.

Truck routing will take into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of mapped truck routes; (c) minimizing off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. To the extent possible, all trucks loaded with site materials will travel from the site using these truck routes. Trucks will not stop or idle in the neighborhood after leaving the project site.

#### **7.6.6 Materials Disposal Off-Site**

The following documentation will be established and reported by the QEP for each disposal destination used in this project to document that the disposal of regulated material exported from the site conforms with applicable laws and regulations: (1) a letter from the QEP or Enrollee to each disposal facility describing the material to be disposed and requesting written acceptance of the material. This letter will state that material to be disposed is regulated material generated at an environmental remediation site in New York, New York under a governmental remediation program. The letter will provide the project identity and the name and phone number of the QEP or Enrollee. The letter will include as an attachment a summary of all chemical data for the material being transported; and (2) a letter from each disposal facility stating it is in receipt of the correspondence (1, above) and is approved to accept the material.

Documentation associated with disposal of all material will include records and approvals for receipt of the material. All impacted soil/fill or other waste excavated and removed from the site

will be managed as regulated material and will be disposed of in accordance with applicable laws and regulations. Historical fill and contaminated soils transported off-site will be handled as solid waste and will not be disposed of at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).

Waste characterization will be performed for off-site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be retained and included in the following Inspection and Certification Report. A manifest system for off-site transportation of exported materials will be employed. Hazardous wastes derived from on-site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

#### **7.6.7 Materials Reuse On-Site**

All soil excavated during any future repair or construction purposes that is free of any observable evidence of impacts (e.g., staining and odor) can be placed in the same excavation it was derived; otherwise, it will be disposed of off-site with approval by NYC OER beforehand.

#### **7.6.8 Repair of Remedial Systems**

After completion of invasive work, any damage of the EC (composite cover system) will be restored to the original condition established during initial construction.

#### **7.6.9 Import of Backfill Soil from Off-Site Sources**

In the event that import soil is needed for backfilling purposes, this Section presents the requirements for imported fill materials. All imported soils will meet NYC OER-approved backfill and cover soil quality objectives for this site, which are Part 375 Commercial Use SCOs. A process will be established to evaluate sources of backfill and cover soil to be imported to the site, and will include an examination of source location, current and historical use(s), and any applicable documentation. Material from industrial sites, spill sites, environmental remediation sites, or other potentially contaminated sites will not be imported to the site.

The following potential sources may be used pending attainment of backfill and cover soil quality objectives:

- Clean soil from construction projects at non-industrial sites in compliance with applicable laws and regulations;
- Clean soil from roadway or other transportation-related projects in compliance with applicable laws and regulations;
- Clean RCA from facilities permitted or registered by the regulations of NYSDEC; and
- Virgin quarried material or other materials with an approved Beneficial Use Determination (BUD) from NYSDEC for reuse as clean fill.

All materials received for import to the site will be approved by a QEP and will be in compliance with provisions in this SMP. The Inspection and Certification Report will report the source of the fill, evidence that an inspection was performed on the source, chemical sampling results, frequency of testing, and a site map indicating the locations where backfill or soil cover was placed.

#### **7.6.10 Source Screening and Testing**

Inspection of imported fill material will include visual, olfactory, and PID screening for evidence of contamination. Materials imported to the site will be subject to inspection, as follows:

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the site at designated locations;
- The QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

Composite samples of imported material from the identified clean soil sources will be collected at a minimum frequency of one sample for every 500 cubic yards of proposed material. One composite sample will be collected from each source of virgin quarried material or other material with an NYSDEC-approved BUD, unless otherwise approved by NYC OER. Once it is determined that the fill material meets imported backfill or cover soil chemical requirements, is non-hazardous, and lacks petroleum contamination, the material will be eligible for on-site import.

RCA may be imported from facilities permitted or registered by NYSDEC. A QEP is responsible to ensure that the facility is compliant with 6 NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require additional testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the site must be derived from recognizable and uncontaminated concrete. RCA will not be used as cover material.

#### **7.6.11 Fluids Management**

All liquids to be removed from the site, including dewatering fluids, will be handled, transported, and disposed of in accordance with applicable laws and regulations. Liquids discharged into the New York City sewer system will receive prior approval by NYCDEP. The NYCDEP regulates discharges to the New York City sewers under Title 15, Rules of the City of New York Chapter 19. If discharge to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-site treatment facility. Discharge of water generated during remedial construction to surface waters (i.e. a stream or river) is prohibited without a State Pollutant Discharge Elimination System (SPDES) permit issued by NYSDEC.

#### **7.6.12 Stormwater Pollution Prevention**

Applicable laws and regulations pertaining to stormwater pollution prevention will be addressed during the remedial program. All existing stormwater systems will be inspected to ensure proper operation.

#### **7.6.13 Odor Control**

All necessary means will be employed to prevent on- and off-site odor nuisances. As required, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) use of foams to cover exposed odorous soils. If odors develop and cannot otherwise be controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; and (e) use of chemical odorants in spray or misting systems.

This odor control plan is capable of controlling emissions of nuisance odors. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYC OER will be notified of all odor

complaint events. Implementation of all odor controls, including halt of work, will be the responsibility of the QEP.

#### **7.6.14 Dust Control**

Dust management during invasive on-site work will include, as required:

- Use of a dedicated water spray methodology for roads, excavation areas and stockpiles;
- Use of properly anchored tarps to cover stockpiles;
- Use of extra care during dry and high-wind periods; and
- Use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface.

If nuisance dust emissions are identified, work will be halted and the source of dusts will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. NYC OER will be notified of all dust complaint events. Implementation of all dust controls, including halt of work, will be the responsibility of the QEP.

#### **7.6.15 Noise**

Noise control will be exercised during the remedial program. All remedial work will conform, at a minimum, to NYC noise control standards.

### **7.7 Community Air Monitoring Plan**

Real-time air monitoring for VOC and particulate concentrations at the perimeter of the exclusion zone or work area will be performed. Continuous monitoring will be performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated media. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pit excavation or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil samples. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while overturning soil, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed during sampling

activities. Concentrations above the action levels that are observed during performance of the CAMP will be reported to the NYC OER Project Manager and included in the daily field report.

#### **7.7.1 VOC Monitoring, Response Levels, and Actions**

VOCs will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total VOCs at the downwind perimeter of the work area or exclusion zone exceeds 5 ppm above background concentrations for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total VOC concentration readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total VOCs at the downwind perimeter of the work area or exclusion zone persist at concentrations in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total VOCs located 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the VOC concentration is above 25 ppm at the perimeter of the work area, activities will be shut down.

All 15-minute readings must be recorded and be available for NYC OER personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.



## 7.7.2 Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will include an audible alarm to indicate concentrations above the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ( $\text{mg}/\text{m}^3$ ) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed  $150 \text{ mg}/\text{m}^3$  above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than  $150 \text{ mg}/\text{m}^3$  above the upwind level, work will be stopped and activities will be reevaluated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within  $150 \text{ mg}/\text{m}^3$  of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for NYC OER personnel to review.

## 7.8 Contingency Plan

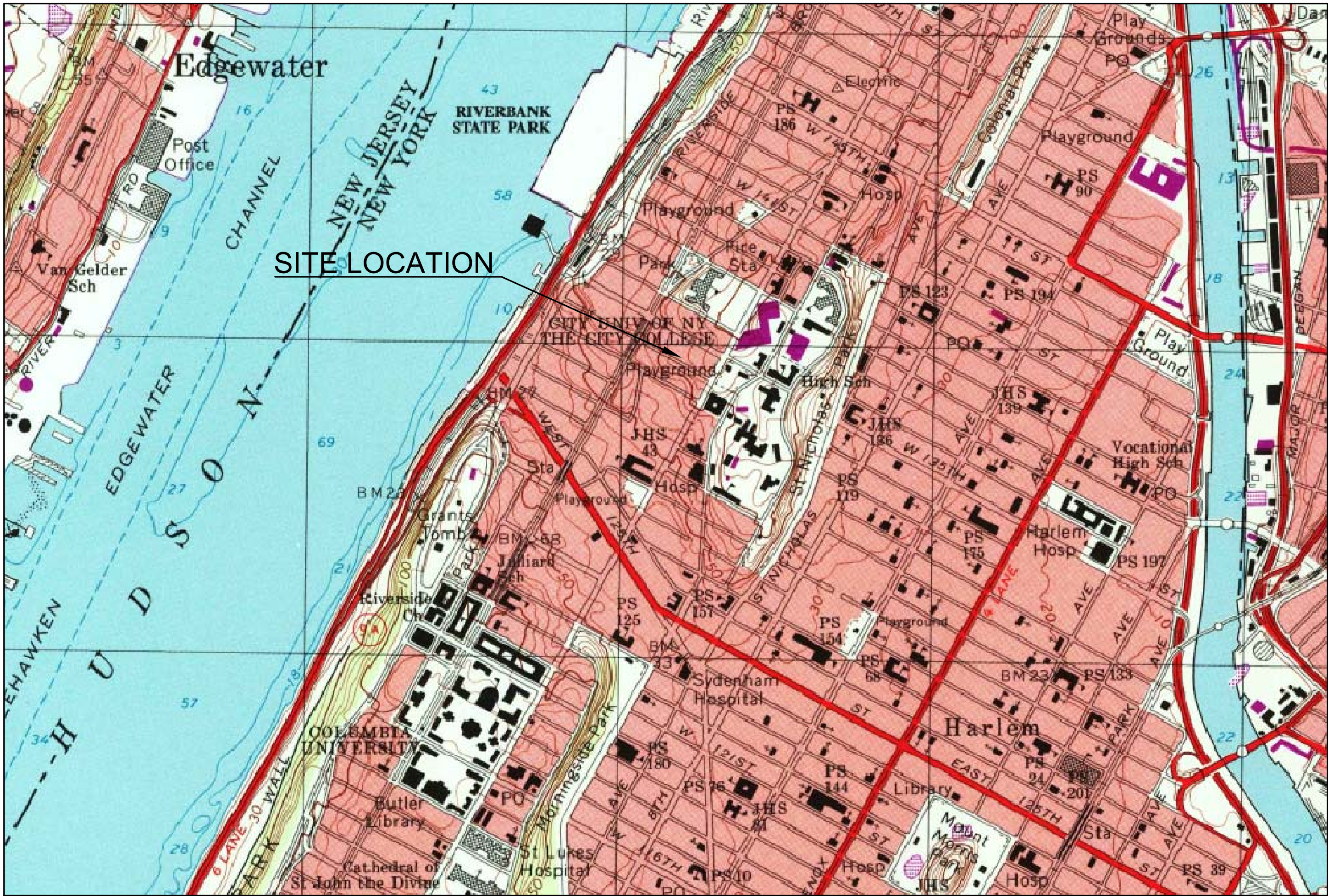
In the event of any emergency condition pertaining to these remedial systems, the Owner's representative(s) should contact the appropriate parties from the contact list below. Prompt contact should also be made to Jason Hayes, PE of Langan. These emergency contact lists must be maintained in an easily accessible location at the site:

### Emergency Telephone Numbers

Medical, Fire, and Police:	911
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One Call Center: 3 day notice required for utility markout	(800) 272-4480
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362
Impact Environmental	(631)-269-8800
Office of Environmental Remediation	(212) 788-8841

## FIGURES



PROJECT # 6598-01-04-4001		FIGURE # 1	
TITLE: Site Location Map		DRAWN BY: BH	
517 West 134th Street, New York, New York		CHECKED BY: KK	
		DATE: 3/7/14	
		SCALE:	
IMPACT ENVIRONMENTAL 170 KEYLAND COURT BOHEMA, NEW YORK 11716 TEL (631) 269-8800 FAX (631) 269-1599 1000 PAGE AVENUE LYNDHURST, NEW JERSEY 07071			









5-STORY  
BRICK AND STONE  
APARTMENT BUILDING

SB-3

SITE EXCAVATED  
TO 10 FEET  
BELOW GRADE

SB-2

ELEVATOR PIT  
EXCAVATED TO 14  
FEET BELOW GRADE

SB-1

5-STORY  
BRICK AND STONE  
APARTMENT BUILDING

CONCRETE SIDEWALK

PHASE II DEEP  
(10'-12') SOIL  
SAMPLE LOCATION  
(TYP)

CURB

DROP CURB

39.42

99.73

**IMPACT ENVIRONMENTAL**

170 KEYLAND COURT  
BOHEMIA, NEW YORK 11716  
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LYNDHURST, NEW JERSEY 07071



TITLE:

**EXCAVATION PLAN**

PROJECT # 6598-01-04-4001

FIGURE #

**3**

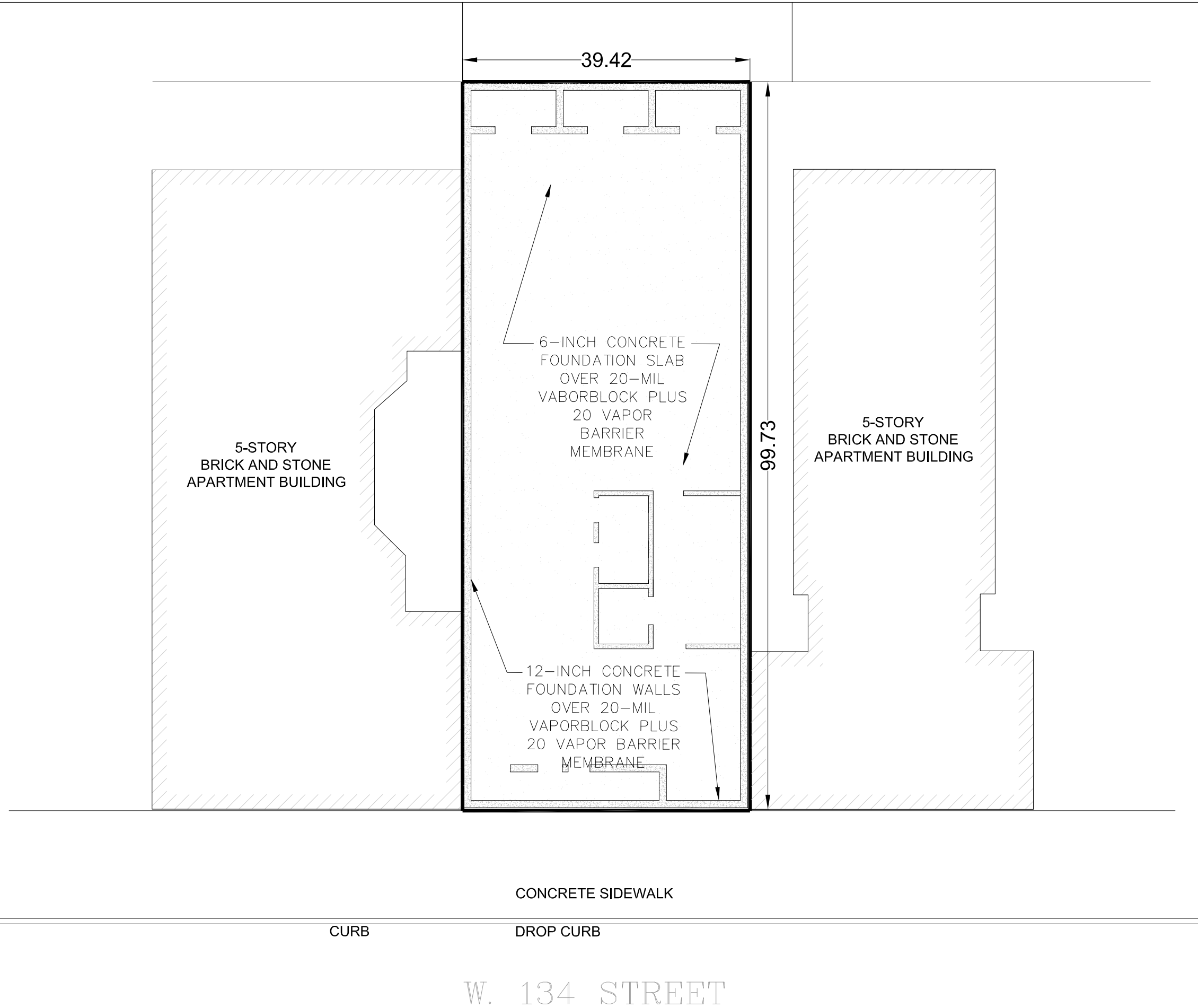
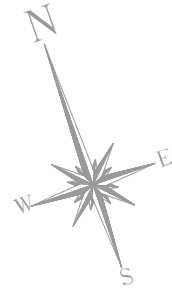
**517 West 134th Street,  
New York, New York**

DRAWN BY: BH

CHECKED BY: KK

DATE:

SCALE: NTS



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TITLE:

**COMPOSITE COVER PLAN**

PROJECT # 6598-01-04-4001

FIGURE #

**4**

DRAWN BY:	BH
CHECKED BY:	KK
DATE:	3/7/14
SCALE:	1" = 15'

**517 West 134th Street,  
New York, New York**

# TABLES



**Table 1 - Phase II Deep Soil Analysis Summary**  
517 West 134th Street, New York NY

CAS Number	Parameter Name	Parameter ID	NYCRR 375 Restricted-Residential	SB-1 (10-12')	SB-2 (10-12')	SB-3 (10-12')
		Depth		13' BGS	12' BGS	12' BGS
		Date		2/4/2014	2/4/2014	2/4/2014
	Sample ID	Unit	ug/kg	ug/kg	ug/kg	ug/kg
71-55-6	1,1,1-Trichloroethane (TCA)	VOC	100,000a	ND	ND	ND
75-34-3	1,1-Dichloroethane	VOC	26,000	ND	ND	ND
75-35-4	1,1-Dichloroethene	VOC	100,000a	ND	ND	ND
95-63-6	1,2,4-Trimethylbenzene	VOC	52,000	ND	ND	ND
95-50-1	1,2-Dichlorobenzene	VOC	100,000a	ND	ND	ND
107-06-2	1,2-Dichloroethane	VOC	3,100	ND	ND	ND
108-67-8	1,3,5-Trimethylbenzene	VOC	52,000	ND	ND	ND
541-73-1	1,3-Dichlorobenzene	VOC	49,000	ND	ND	ND
106-46-7	1,4-Dichlorobenzene	VOC	13,000	ND	ND	ND
123-91-1	1,4-Dioxane	VOC	13,000	ND	ND	ND
78-93-3	2-Butanone	VOC	100,000a	ND	ND	ND
67-64-1	Acetone	VOC	100,000b	3.7 J	ND	ND
71-43-2	Benzene	VOC	4,800	ND	ND	ND
56-23-5	Carbon Tetrachloride	VOC	2,400	ND	ND	ND
108-90-7	Chlorobenzene	VOC	100,000a	ND	ND	ND
67-66-3	Chloroform	VOC	49,000	ND	ND	ND
156-59-2	cis-1,2-Dichloroethene	VOC	100,000a	ND	ND	ND
100-41-4	Ethylbenzene	VOC	41,000	ND	12 J	ND
75-09-2	Methylene Chloride	VOC	100,000a	ND	ND	ND
1634-04-4	Methyl Tert-Butyl Ether	VOC	100,000a	ND	ND	ND
91-20-3	Naphthalene	SVOC	100,000a	ND	ND	ND
104-51-8	n-Butylbenzene	VOC	100,000a	ND	530	74
103-65-1	n-Propylbenzene	VOC	100,000a	ND	490	ND
135-98-8	sec-Butylbenzene	VOC	100,000a	0.26 J	800	110
98-06-6	tert-Butylbenzene	VOC	100,000a	ND	35 J	ND
127-18-4	Tetrachloroethene (PCE)	VOC	19,000	ND	52 J	ND
108-88-3	Toluene	VOC	100,000a	0.4 J	28 J	19 J
1330-20-7	Total Xylenes	VOC	100,000a	ND	ND	ND
156-60-5	trans-1,2-Dichloroethene	VOC	100,000a	ND	ND	ND
79-01-6	Trichloroethene (TCE)	VOC	21,000	ND	ND	ND
75-01-4	Vinyl Chloride	VOC	900	ND	ND	ND
	Total BTEX			0.4 J	40 J	19 J
	Total VOCs			0.66 J	1947	222



**Table 1 - Phase II Deep Soil Analysis Summary**  
517 West 134th Street, New York NY

CAS Number	Parameter Name	Parameter ID	NYCRR 375 Restricted-Residential	SB-1 (10-12')	SB-2 (10-12')	SB-3 (10-12')
		Depth		13' BGS	12' BGS	12' BGS
		Date		2/4/2014	2/4/2014	2/4/2014
	Sample ID	Unit	ug/kg	ug/kg	ug/kg	ug/kg
83-32-9	Acenaphthene	SVOC	100,000a	ND	ND	ND
208-96-8	Acenaphthylene	SVOC	100,000a	ND	ND	ND
120-12-7	Anthracene	SVOC	100,000a	ND	ND	ND
56-55-3	Benzo-a-Anthracene	SVOC	1,000f	ND	ND	45 J
50-32-8	Benzo-a-Pyrene	SVOC	1,000f	140 J	ND	160
205-99-2	Benzo-b-Fluoranthene	SVOC	1,000f	140	ND	170
207-08-9	Benzo-k-Fluoranthene	SVOC	3,900	ND	ND	ND
191-24-2	Benzo-g,h,i-Perylene	SVOC	100,000a	130 J	ND	140 J
218-01-9	Chrysene	SVOC	3,900	ND	ND	46 J
132-64-9	Dibenzofuran	SVOC	59,000	ND	ND	ND
53-70-3	Dibenzo-a,h-Anthracene	SVOC	330e	ND	ND	ND
206-44-0	Fluoranthene	SVOC	100,000a	87 J	ND	96 J
86-73-7	Fluorene	SVOC	100,000a	ND	ND	93 J
118-74-1	Hexachlorobenzene	SVOC	1,200	ND	ND	ND
193-39-5	Indeno(1,2,3-cd)Pyrene	SVOC	500f	190	ND	220
87-86-5	Pentachlorophenol	SVOC	6,700	ND	ND	ND
85-01-8	Phenanthrene	SVOC	100,000a	49	ND	51 J
129-00-0	Pyrene	SVOC	100,000a	78 J	ND	100 J
	Total cPAHs			470	ND	641
	Total SVOCs			814	ND	1,121



**Table 1 - Phase II Deep Soil Analysis Summary**  
517 West 134th Street, New York NY

CAS Number	Parameter Name	Parameter ID	NYCRR 375 Restricted-Residential	SB-1 (10-12')	SB-2 (10-12')	SB-3 (10-12')
		Depth		13' BGS	12' BGS	12' BGS
		Date		2/4/2014	2/4/2014	2/4/2014
	Sample ID	Unit	ug/kg	ug/kg	ug/kg	ug/kg
72-54-8	4,4-DDD	PESTICIDE	13,000	ND	ND	14.2 J
72-55-9	4,4-DDE	PESTICIDE	8,900	ND	ND	23.3 J
50-29-3	4,4-DDT	PESTICIDE	7,900	ND	ND	35.7 J
309-00-2	Aldrin	PESTICIDE	97	ND	ND	ND
319-84-6	alpha-BHC	PESTICIDE	480	ND	ND	ND
5103-71-9	Alpha Chlordane	PESTICIDE	4,200	ND	ND	ND
12674-11-2	Aroclor 1016	PCB	NA	ND	ND	ND
1104-28-2	Aroclor 1221	PCB	NA	ND	ND	ND
11141-16-5	Aroclor 1232	PCB	NA	ND	ND	ND
53469-21-9	Aroclor 1242	PCB	NA	ND	ND	ND
12672-29-6	Aroclor 1248	PCB	NA	ND	ND	ND
11097-69-1	Aroclor 1254	PCB	NA	ND	ND	ND
11096-82-5	Aroclor 1260	PCB	NA	ND	ND	ND
319-85-7	beta-BHC	PESTICIDE	360	ND	ND	ND
319-86-8	delta-BHC	PESTICIDE	100,000a	ND	ND	ND
60-57-1	Dieldrin	PESTICIDE	200	ND	ND	ND
959-98-8	Endosulfan I	PESTICIDE	24,000i	ND	ND	ND
33213-65-9	Endosulfan II	PESTICIDE	24,000i	ND	ND	ND
1031-07-8	Endosulfan Sulfate	PESTICIDE	24,000i	ND	ND	ND
72-20-8	Endrin	PESTICIDE	11,000	ND	ND	ND
58-89-9	gamma-BHC	PESTICIDE	1,300	ND	ND	ND
76-44-8	Heptachlor	PESTICIDE	2,100	ND	ND	ND
1336-36-3	Polychlorinated Biphenyls	PESTICIDE	1,000	ND	ND	ND
	Unit		mg/kg	mg/kg	mg/kg	mg/kg
7440-38-2	Arsenic, As	METAL	16f	6.5	5.5	14
7440-39-3	Barium, Ba	METAL	400	130	25	200
7440-41-7	Beryllium, Be	METAL	72	0.28	0.26	0.23 J
7440-43-9	Cadmium, Cd	METAL	4.3	ND	ND	0.15 J
7440-47-3	Chromium, Cr	METAL	110	23	10	24
18540-29-9	Chromium, hexavalent	METAL	110	ND	ND	ND
16065-83-1	Chromium, trivalent	METAL	180	23	10	24
7440-50-8	Copper, Cu	METAL	270	29	9.4	45
57-12-5	Cyanide	METAL	27	ND	ND	ND
7439-92-1	Lead, Pb	METAL	400	48	7.5	68
7439-96-5	Manganese, Mn	METAL	2,000f	270	130	260
7439-97-6	Mercury, Hg	METAL	.81j	0.63	ND	0.5
7440-02-0	Nickel, Ni	METAL	310	28	10	23
7782-49-2	Selenium, Se	METAL	180	ND	ND	0.25 J
7440-22-4	Silver, Ag	METAL	180	ND	ND	ND
7440-66-6	Zinc, Zn	METAL	10,000d	78	28	170

Notes: Shaded values indicate an exceedance of NYCRR 375 Restricted Residential and NYCRR 375 Unrestricted Use values.

J = Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit



**Table 2 - Soil Disposal Summary**

517 W 134th Street

Shipment Date	Manifest Number	Transporter Name/Truck Name	License Plate	On-Site Location (approx. depth)	Off-Site Disposal Facility	Tonnage
2/9/2015	262422	Mendez Trucking	AP328G	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	28.30
2/9/2015	262423	Mendez Trucking	AP639R	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	26.49
2/9/2015	262420	Mendez Trucking	AP690W	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	26.54
2/9/2015	262421	Mendez Trucking	AP791H	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	23.77
2/9/2015	262425	Mendez Trucking	AR904C	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	27.83
2/9/2015	262406	Mendez Trucking	AS521B	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	26.81
2/9/2015	262424	Mendez Trucking	AS530D	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	26.92
3/31/2015	278690	JC Transport	AP124L	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	27.90
3/31/2015	278684	JC Transport	AP124L	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	23.86
3/31/2015	278688	JC Transport	AP345S	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	26.00
3/31/2015	278683	JC Transport	AP345S	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	23.19
3/31/2015	278682	JC Transport	AR610G	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	18.89
3/31/2015	278687	JC Transport	AS121E	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	24.92
3/31/2015	278689	JC Transport	AS319F	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	29.85
3/31/2015	278681	JC Transport	AS319F	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	21.17
3/31/2015	278691	JC Transport	AS622A	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	24.68
3/31/2015	278685	JC Transport	AS622A	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	25.45
8/19/2015	307481	CSS	AP263V	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	30.97
8/19/2015	307479	CSS	AP263V	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	32.24
8/19/2015	307482	CSS	AS269P	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	29.77
8/19/2015	307478	CSS	AS269P	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	28.32
8/19/2015	307493	Serpa	AS515R	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	33.48
8/20/2015	284213	CSS	AP263V	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	31.75
8/20/2015	284214	Nickabella	AR285F	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	26.25
8/20/2015	284211	Nickabella	AR463G	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	27.44

**Table 2 - Soil Disposal Summary**

517 W 134th Street

Shipment Date	Manifest Number	Transporter Name/Truck Name	License Plate	On-Site Location (approx. depth)	Off-Site Disposal Facility	Tonnage
8/20/2015	284215	CSS	AS269P	0'-5' BGS	Former NJ Zinc- West Plant, Palmerton, PA	26.57
8/20/2015	284216	Nickabella	AS394F	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	26.29
8/20/2015	284212	CSS	AS676K	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	29.67
8/20/2015	312856	CSS	AS705S	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	26.96
11/18/2015	334167	DI Trucking	AP134Z	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	29.76
11/18/2015	334171	DI Trucking	AP508N	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	30.85
11/18/2015	334169	DI Trucking	AP584U	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	33.10
11/18/2015	334172	DI Trucking	AR713H	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	28.76
11/18/2015	334170	DI Trucking	AS121T	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	35.48
11/18/2015	334168	DI Trucking	AS159M	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	34.82
11/23/2015	334182	DI Trucking	AP508N	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	34.05
11/23/2015	334184	Nickabella	AP650X	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	31.53
11/23/2015	334185	Nickabella	AS157C	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	28.92
11/23/2015	334183	DI Trucking	AS159M	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	32.56
11/23/2015	334186	Nickabella	AS411E	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	28.37
11/23/2015	334181	DI Trucking	AS839K	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	30.15
11/25/2015	334180	Nickabella	AS370P	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	23.92
11/25/2015	334177	Nickabella	AS657T	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	23.28
11/25/2015	334179	Nickabella	AS772H	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	24.98
11/25/2015	334178	Nickabella	AS851X	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	25.89
11/30/2015	334174	Nickabella	AR403E	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	29.95
11/30/2015	334175	Nickabella	AS254C	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	24.75
11/30/2015	334173	Nickabella	AS614K	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	25.61
12/8/2015	335858	T-Mak Service	AS147U	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	34.20
12/8/2015	335859	T-Mak Service	AS873T	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	37.96

**Table 2 - Soil Disposal Summary**

517 W 134th Street

Shipment Date	Manifest Number	Transporter Name/Truck Name	License Plate	On-Site Location (approx. depth)	Off-Site Disposal Facility	Tonnage
12/8/2015	334176	DI Trucking	AP508N	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	35.40
12/8/2015	335860	DI Trucking	AS121T	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	35.37
12/8/2015	335861	DI Trucking	AS119T	5'-10' BGS	Former NJ Zinc- West Plant, Palmerton, PA	28.19
TOTAL						1510.13